I. AMENDMENTS

AMENDMENTS TO THE CLAIMS

Please enter the amendments to claims 1, 4-7, 11, 12, and 14, as shown below.

Please enter new claims 16-28, as shown below.

1. (Currently amended) A method for detecting an amyloid peptide-related neurological disorder in a non-human animal model of the disorder, the method comprising:

detecting a level of a calcium-responsive gene product in brain tissue of the animal model;

wherein detection of a level of calcium-responsive gene product in the brain tissue that differs from a level of the calcium-responsive gene product associated with a normal control animal is indicative of an amyloid peptide-related neurological disorder in the animal.

2. (Original) The method of claim 1, wherein the non-human animal model is an $hAPP_{FAD}$/Aβ transgenic non-human animal model of Alzheimer's Disease.

3. (Original) The method of claim 1, wherein the brain tissue is a hippocampal brain sample.

4. (Currently amended) The method of claim 3, wherein the brain tissue is ~~a granule cell of the~~ dentate gyrus.

5. (Currently amended) The method of claim 1, wherein the calcium-responsive gene product is selected from a calbindin polypeptide, a neuropeptide Y polypeptide, an α-actinin II polypeptide, a Fos polypeptide, Arc polypeptide, and a phospho-ERK polypeptide.

6. (Currently amended) The method of claim 1, wherein the calcium-responsive gene product is selected from calbindin mRNA, neuropeptide Y mRNA, α-actinin II mRNA, c-Fos mRNA, Arc mRNA, and ~~phosph-ERK~~ ERK mRNA.

7. (Currently amended) The method of claim 1, wherein the neurological disorder is impaired spatial learning or impaired memory.

8. (Original) A method for identifying a candidate agent for treating an amyloid peptide-related neurological disorder, the method comprising:

administering a test agent to a non-human animal model of an amyloid peptide-related neurological disorder; and

detecting a level of a calcium-responsive gene product *in vitro* in brain tissue of the animal;

wherein detection of a level of calcium-responsive gene product in the brain tissue that differs significantly from a level of the calcium-responsive gene product in the absence of the agent indicates that the test agent is a candidate agent for treating an amyloid peptide-related neurological disorder.

9. (Original) The method of claim 8, wherein the non-human animal model is an $hAPP_{FAD}/A\beta$ transgenic non-human animal model of Alzheimer's disease.

10. (Original) The method of claim 8, wherein the brain tissue is a hippocampal brain sample.

11. (Currently amended) The method of claim 10, wherein the brain tissue is ~~a granule cell of the~~ dentate gyrus.

12. (Currently amended) The method of claim 8, wherein the neurological disorder is impaired spatial learning or impaired memory.

13. (Original) The method of claim 8, wherein the calcium-responsive gene product is selected from a calbindin polypeptide, a phospho-ERK polypeptide, and an α-actinin II polypeptide.

14. (Currently amended) The method of claim 8, wherein the calcium-responsive gene product is selected from calbindin mRNA, ~~phospho-ERK~~ ERK mRNA, and α-actinin II mRNA.

15. (Withdrawn) A method of detecting an amyloid peptide-related neurological disorder in a living subject, the method comprising administering to the subject a detectably labeled agent that binds a calcium-responsive gene product; and detecting binding between the agent and the calcium-responsive gene product in the dentate gyrus of the individual.

16. (New) The method of claim 1, wherein the amyloid peptide-related neurological disorder is a behavioral deficit.

17. (New) The method of claim 8, wherein the amyloid peptide-related neurological disorder is a behavioral deficit.

18. (New) A method for detecting an amyloid peptide-related neurological disorder in a non-human animal model of the disorder, the method comprising:

detecting a level of a calcium-responsive gene product of the animal model, wherein the animal model is a transgenic mouse having a genome comprising a transgene encoding an amyloid precursor protein;

wherein detection of a level of calcium-responsive gene product in hippocampal tissue of the transgenic mouse that differs from a level of the calcium-responsive gene product associated with a normal control mouse is indicative of an amyloid peptide-related neurological disorder in the mouse.

19. (New) The method of claim 18, wherein the amyloid precursor protein is a mutant amyloid precursor protein.

20. (New) The method of claim 18, wherein the calcium-responsive gene product is selected from calbindin mRNA, calbindin protein, c-fos mRNA, Fos protein, Arc mRNA, Arc protein, neuropeptide Y mRNA, neuropeptide Y protein, ERK mRNA, phospho-ERK protein, α-actinin II mRNA, and α-actinin II protein.

21. (New) The method of claim 18, wherein the amyloid peptide-related neurological disorder is a behavioral deficit.

22. (New) The method of claim 18, wherein the neurological disorder is impaired spatial learning or impaired memory.

23. (New) The method of claim 18, wherein the hippocampal tissue comprises dentate gyrus.

24. (New) A method for identifying a candidate agent for treating an amyloid peptide-related neurological disorder, the method comprising:

administering a test agent to a non-human animal model of the amyloid peptide-related neurological disorder, wherein the animal model is a transgenic mouse having a genome comprising a mutant amyloid precursor protein; and

detecting a level of a calcium-responsive gene product in a hippocampal tissue of the transgenic mouse;

wherein detection of a level of calcium-responsive gene product in the hippocampal tissue that differs significantly from a level of the calcium-responsive gene product in the absence of the agent indicates that the test agent is a candidate agent for treating an amyloid peptide-related neurological disorder.

25. (New) The method of claim 24, wherein the calcium-responsive gene product is selected from calbindin mRNA, calbindin protein, c-fos mRNA, Fos protein, Arc mRNA, Arc protein, neuropeptide Y mRNA, neuropeptide Y protein, ERK mRNA, phospho-ERK protein, α-actinin II mRNA, and α-actinin II protein.

26. (New) The method of claim 24, wherein the amyloid peptide-related neurological disorder is a behavioral deficit.

27. (New) The method of claim 24, wherein the neurological disorder is impaired spatial learning or impaired memory.

28. (New) The method of claim 24, wherein the hippocampal tissue comprises dentate gyrus.